UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
SENECA NATION OF INDIANS

WATER RESOURCES INVESTIGATIONS REPORT 84-4129
PLATE 1

79° 05'

79° 00'

42° 33'

42° 30'

LAKE ERIE

FARNHAM

IRVING

HANOVER

PERRYSBURG

VERSAILLES

LIMTONS

COLLINS

GOWANDA

CHAUTAUQUA COUNTY

ERIE COUNTY

CATTARAUGUS COUNTY

CATTARAUGUS CREEK

BRANT

CATTARAUGUS RESERVATION

0 ½ 1 2 MILES

0 ½ 1 2 KILOMETERS

Contour interval 20 feet

EXPLANATION

QUATERNARY

Surficial deposits overlying bedrock units

DEVONIAN

Gowanda Shale Member of the Canadaway Formation; gray to black shale with some interbedded gray siltstones, some concretions

South Wales Shale Member of the Canadaway Formation; gray shale with some gray siltstone, some horizons concretionary

Dunkirk Shale Member of the Canadaway Formation; dark gray to black shale, septaria

Hanover Shale Member of the Java Formation; gray and black shale, thin siltstone and limestone, calcareous nodules

Angola Shale Member of the West Falls Formation; gray shales and mudstones, abundant calcareous nodules and concretions, fissile grayish black and brownish black shales

BARIUM CONCENTRATION

- Less than 0.3 mg/L
- 0.3 to <1.0 mg/L
- 1.0 to <10 mg/L
- 10.0 to 23.0 mg/L

WELL LOCATION

- 10 — Location of wells sampled for barium; location is at center of small circles or at point of triangle on large circles; numbers are the "local numbers" given in table 3
- 64 — Gas well
- G — Gas well

Base from U.S. Geological Survey
Farnham, 1960, Gowonda, 1963; and
North Collins, 1960, NY, 1:24,000 scale

Bedrock geology and stratigraphic nomenclature from Buehler and Tesmer (1963) and Tesmer (1975)

BEDROCK GEOLOGY AND DISTRIBUTION OF BARIUM CONCENTRATIONS IN GROUND WATER AT THE CATTARAUGUS INDIAN RESERVATION